

### **Abstract of the Disclosure**

A vehicle navigation system employing echo or doppler analysis to provide autonomous or enhanced navigational capabilities by correlating stored scene information with echo analysis information derived from an Active Traveling-Wave Device (ATWD) output representing information concerning the vehicle's state and velocity vectors with respect to a mapped scene. The system employs a steppable frequency oscillator for providing a signal which is stepped in frequency to provide an increased range resolution of the ATWD.